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EXAMINER

HOANG, PHUONG N

ART UNIT

PAPER NUMBER

2194

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/663,564

Applicant(s)

SLAUGHTER ET AL.

Examiner

Phuong N. Hoang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23, 42 - 43, 47 - 49, and 64 is/are allowed.
- 6) ☒ Claim(s) 1 - 22, 24 - 41, 44 - 46, 50 - 63, and 65 - 66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 66 are pending for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1, 10, 13 – 14, 16 – 21, 24 – 26, 44 – 46, 50 – 53, 58 – 63, 65 – 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Object Management Group (OMG) “Agent Technology” version 0.91 pages 1 – 66 in view of Buckle, UK patent no. 2 332 288 A.**

4. Buckle reference was cited in the last office action.

5. **As to claims 1**, OMG teaches a method for representing a state of a process in a data representation language in a distributed computing environment, the method comprising the steps of:

executing the process within a first device (executed processes where such processes may be implemented as agents, section 2.2 and 4.3.1 on page 26);

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converting (convert data representation into another one, 4.4.2 and 3.4) a current state process (current state of the agent, section 4.3.1) into a language representation of the current process wherein the computation state of the process (computation state, 3.3.6) comprises information about the execution state of the process within the first device;

storing the language representation of the current computation process (store, 4.3.1);

wherein the representation language representation of the current computation state of the process is configured for use in restored (restored, 4.3.1) the process and resuming execution of the process (resume executing at the new host, 2.2.5).

OMG does not explicitly teach the step of reconstitution the process.

Buckle teaches reconstituting (re-constructing the byte stream back into an object resident in remote host, page 38 lines 30 - page 39 lines 5) the process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of OMG and Buckle's system because the reconstitution would enable the message to be understandable at the remote host as they are moved.

6. **As to claim 10**, OMG modified Buckle modified teaches the first device accessing the stored data representation language representation of the current computation state of the process from the space service (OMG; store and forward, 4.3.1);

reconstituting at the first device (Buckle; re-constructing the byte stream back into an object resident residing on a single machine, p. 15 lines 20 - 29, and page 38 lines 30 - page 39 lines 5) the process at the current computation state within the first device from the data representation language representation of the current computation state of the process;

ending execution of the process within the first device (Buckle; ending when message is transferred), resuming execution of the process within the first device from the current computation state (Buckle; continue execution at L2 residing on a single machine, p. 15 lines 20 - 29 and p. 38 lines 10 - 20).

7. **As to claim 13**, OMG modified by Buckle teaches the steps of wherein the current computation state of the process includes one or more objects (OMG; objects, 3.4 and 7.11) of the process, wherein an object is an instance of a class in a computer programming language, and wherein said converting a current computation state of the process into a data representation language representation of the current computation state comprises:

converting the one or more objects into data representation language representations of the one or more objects (OMG; Java objects to xml, 3.4 and 4.4.2);

wherein the data representation language representations of the one or more objects are configured for use in generating copies of the one or more objects (Buckle; objects can be recovered back into object resident in remote host, p. 39).

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8. **As to claim 14**, OMG teaches the step of wherein the computer programming language is the Java programming language (Java, 3.4).

9. **As to claims 16 and 17**, OMG teaches the step of wherein the process is executing within a virtual machine (Java would require Java virtual machine, 3.4) executing within the first device.

10. **As to claim 18**, OMG teaches the step of data representation language is extensive markup language (XML, 4.1.1).

11. **As to claim 19**, this is the method claim of claim 1. See rejection for claim 1 above. Further, OMG teaches sending the data representation language to the second device (mobile agents carrying xml-based messages to the new host, 4.4).

12. **As to claims 20 and 21**, OMG teaches the steps of wherein said sending the data representation language representation of the current computation state of the process to a second device comprises sending the data representation language representation in one or more messages to the second device (send messages to new host, 3.4 and 4.1.1).

13. **As to claims 24 and 25**, see rejection for claims 16 and 17 above.

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14. **As to claim 26**, see rejection for claim 18 above.
15. **As to claim 44**, it is the system claim of claim 19. See rejection for claim 19 above.
16. **As to claim 45**, see rejection for claim 20 above.
17. **As to claim 46**, see rejection for claim 21 above.
18. **As to claim 50**, see rejection for claim 18 above.
19. **As to claim 51**, it is the software claim of claim 1. See rejection for claim 1 above.
20. **As to claims 52 and 53**, see rejection for claims 2 and 3 above.
21. **As to claim 58**, see rejection for claim 10 above.
22. **As to claim 59**, see rejection for claim 16 above.
23. **As to claim 60**, see rejection for claim 18 above.

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24. **As to claim 61**, it is the software claim of claim 19. See rejection for claim 19 above.

25. **As to claims 62 and 63**, see rejection for claims 20 and 21 above.

26. **As to claim 65**, see rejection for claim 24 above.

27. **As to claim 66**, see rejection for claim 18 above.

28. **Claims 2 – 9, 11, 27 - 34, 36 – 41, and 54 - 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Object Management Group (OMG) “Agent Technology” version 0.91 pages 1 – 66, in view of Buckle, UK patent no. 2 332 288 A, and further in view of Ardissono “An Agent Architecture for Personalized Web Stores” pages 182 – 189.**

29. **As to claim 2**, OMG and Buckle do not explicitly teach the step of the space service is operable to store and retrieve documents to the space for processes in the distributed computing environment.

Ardissono teaches the step of stores is operable to store and retrieve documents to the space for processes in the distributed computing environment (web stores for storing and retrieving data, title and section 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Ardissono to OMG and Buckle's system because Ardissono's stores would keep the data for accessing and retrieving data for services in the distributed system.

30. **As to claims 3 and 4**, OMG teaches messages are in the data representation language (messages are in XML-based, section 4.6.2).

31. **As to claim 5**, OMG and Buckle modified by Ardissono teaches the steps of:
a second device (OMG; new host, section 4.4) accessing the stored data representation language representation of the current computation state of the process (Ardissono; web stores for storing and retrieving data, title and section 2);

reconstituting (Buckle; re-constructing the byte stream back into an object resident in remote host, page 38 lines 30 - page 39 lines 5) the process at the current computation state within the second device from the data representation language representation of the current computation state of the process; and

resuming execution of the process within the second device from the current computation state (OMG; resume execution at new or remote host, 2.2.5).

32. **As to claims 6 and 7**, see rejection for claim 2 above. Further, OMG teaches the step of one or more messages are in the data representation language (ACL messages are implemented as XML-based, 4.1.1).

33. **As to claim 8**, OMG teaches the steps of
generating an advertisement for the data representation language
representation, wherein the advertisement comprises information to enable access
(agent security, identity and policy to access data, 4.6) to the stored data representation
language representation, and wherein the second device accessing the stored data
representation language representation comprises:

the second device accessing the advertisement for the stored data
representation language representation; the second device locating the stored data
representation language representation using the information in the advertisement (the
remote host can access the policy to know a which groups can access the data).

34. **As to claim 9**, this is the method claim of claim 1, 2, and 8. See rejection for
claims 1, 2, and 8 above.

35. **As to claim 11**, Ardissono teaches the threads (threads, col. 11 lines 7 – 20 and
col. 12 lines 28 – 35).

36. **As to claim 27**, OMG teaches the steps of:
a first device (executing the agent on the sending host, 4.1.1) operable to
execute the process); wherein the first device is configured to converting (convert data
representation into another one, 4.4.2 and 3.4) a current state process (current state of

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the agent, section 4.3.1) into a language representation of the current process wherein the computation state of the process (computation state, 3.3.6) comprises information about the execution state of the process within the first device; and send the communication language messages to the remote host (mobile agents carrying xml-based messages to the new host, 4.4).

OMG does not explicitly teach the second device includes space service.

Buckle teaches the second device comprises the space service for storing the messages (the agent code is stored at location L2, pages 38 – 39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of OMG and Buckle's system because Buckle's space service would provide the space for storing the messages for the processing and reconstituting at the destination.

OMG and Buckle do not explicitly teach that the space service for storing data used in the distributed computing environment.

Ardissono teaches the step of stores is operable to store and retrieve documents to the space for processes in the distributed computing environment (web stores for storing and retrieving data, title and section 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Ardissono to OMG and Buckle's system because Ardissono's stores would keep the data for accessing and retrieving data for services in the distributed system.

37. **As to claims 28 and 29**, see rejection for claims 6 and 7.
38. **As to claims 30 - 32**, OMG teaches the distributed environment would comprise many computer devices including the third device that is able to process the same functions as the second device (section 4.6).
39. **As to claim 33**, see rejection for claim 10 above.
40. **As to claim 34**, see rejection for claim 11 above.
41. **As to claims 36 - 37**, see rejection for claims 13 - 14 above respectively.
42. **As to claims 38 and 39**, see claims 16 and 17 above.
43. **As to claim 40**, see rejection for claim 18 above.
44. **As to claim 41**, it is the system claims of claims 1 and 8. See rejection for claims 1 and 8 above.
45. **As to claim 54**, see rejection for claim 5.
46. **As to claim 55**, see rejection for claim 6 above.

47. **As to claim 56**, see rejection for claim 8 above.

48. **As to claim 57**, this is the medium claim of claim 9. See rejection for claim 9 above.

49. **Claims 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Object Management Group (OMG) "Agent Technology" version 0.91 pages 1 – 66 in view of Buckle, UK patent no. 2 332 288 A, and further in view of Edward "Core Jini" pages 405 – 410.**

50. Edward was cited in the last office action.

51. **As to claim 12**, OMG and Buckle do not teach the steps of the one or more leases in the data representation language representation of the current computation state, wherein the information describing the one or more leases is configured for use in reestablishing the one or more leases to services for the process when resuming execution of the process.

Edward teaches including information describing the one or more leases (leases, pages 405 – 410), wherein the information describing the one or more leases is

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configured for use in reestablishing the one or more leases to services (renewing a lease) for the process when resuming execution of the process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of OMG and Edward's system because Edward's lease would provide the length of the service for accessing the resources.

52. **As to claim 22**, see claim 12 above.

53. **Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Object Management Group (OMG) "Agent Technology" version 0.91 pages 1 – 66 in view of Buckle, UK patent no. 2 332 288 A, further in view of Ardissono "An Agent Architecture for Personalized Web Stores" pages 182 – 189, and further in view of Edward "Core Jini" pages 405 – 410.**

54. Edward was cited in the last office action.

55. **As to claim 35**, OMG, Buckle, Ardissono do not teach the steps of the one or more leases in the data representation language representation of the current computation state, wherein the information describing the one or more leases is configured for use in reestablishing the one or more leases to services for the process when resuming execution of the process.

Edward teaches including information describing the one or more leases (leases, pages 405 – 410), wherein the information describing the one or more leases is configured for use in reestablishing the one or more leases to services (renewing a lease) for the process when resuming execution of the process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of OMG, Buckle, Ardissono, and Edward's system because Edward's lease would provide the length of the service for accessing the resources.

56. **As to claim 35**, see rejection for claim 12 above.

Allowable Subject Matter

57. Claims 23, 42 – 43, 47 – 49, and 64 are allowed.

Response to Arguments

58. Applicant's arguments filed on 8/11/05 with respect to claims 1 – 22, 24 – 41, 44 – 46, 50 – 63, and 65 – 66 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

59. The prior art of record but not relied upon request is considered to be pertinent to applicant's disclosure.

Lo et. al, US patent no. 6,854,120, demonstrating a method of executing a request via an Internet.

Meltzer et al, US patent no. 6,125,391, demonstrating a method of converting Java objects to xml and vice versa.

Pham et al, "Mobile Software Agents: An Overview", July 1998, pages 1 – 18, demonstrating mobile Java objects.

Sivan, "Building Intelligent Market Places with Software Agents", 2000, pages 1 – 81, demonstrating mobile agent architecture.


60. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong N. Hoang whose telephone number is (571)272-3763. The examiner can normally be reached on Monday - Friday 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Thomson can be reached on 571-272-3718. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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